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AUTHOR Melkote, Srinivas R.
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ABSTRACT

A study looked at an agricultural extension project in south India to examine comprehension of the extension team's intentionality by the poorest farmers. Subjects, 50 farmers in the village of Porandla in the state of Andhra Pradesh, were interviewed and measured to see if their knowledge and comprehension approximated a constant across all receivers. The results showed that the source was not very successful in achieving isomorphism of intent with receivers. The distribution of comprehension scores revealed both low comprehension and a great variability in those scores across all farmers. Results suggest that if the objectives of the source are to be served, then it is crucial to study the message code, structure, and treatment to determine the extent to which it is capable of producing uniform and adequate comprehension of the source's intentionality within receivers. Unless the comprehension approximates uniformity across all potential receivers, the variance in the ensuing decision which may result in variance in behavior, i.e. adoption or rejection of an innovation, will not be adequately explained. Findings, therefore, suggest a reorientation in development communication research from a study of overt behavior as the dependent variable to an examination of receiver comprehension of source messages that may be producing that behavior. (Twenty-six references are attached, and five tables are included.) (RAE)

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REVEALING COMMUNICATION CONSTRAINTS IN
EXTENSION COMMUNICATION STRATEGIES

(A case-study of a project under the
World Bank's T & V System, India)

By

Srinivas R. Melkote
Radio-Television-Film Department
School of Mass Communication
Bowling Green State University
Bowling Green, Ohio 43403-0235
Phone: (419) 372-8641

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REVEALING COMMUNICATION CONSTRAINTS IN EXTENSION COMMUNICATION STRATEGIES

Abstract

Reviewing the efforts of diffusion projects in the last two decades in the Third World, there is cause for concern about the nature and quality of development messages delivered to the poorest farmers. Consequently, the comprehension of relevant information by the poorest farmers has been far from satisfactory. This author posits that the poorest farmers lack adequate comprehension of cognitive and manual skills necessary to make informed and effective decisions on innovations.

Adequate and uniform comprehension is a necessary condition for informed decision-making. If there is variability in comprehension that individuals derive from messages they receive, then it is quite likely that decisions which result from such comprehension may also vary. Therefore, unless that comprehension approximates a constant across all receivers, the variance in the ensuing decision which may result in variance in behavior, i.e. adoption or rejection of an innovation, will not be adequately explained. The convergence model posits that sources of communication should achieve isomorphism of intent with their receivers. Is this being achieved in development communication projects? This study looked at an agricultural extension project in south India. The objective was to examine comprehension of extension team's intentionality by the poorest farmers.

The results of the study showed that the source was not very successful in achieving isomorphism of intent with receivers. The distribution of comprehension scores revealed both low comprehension and a great variability in those scores across all farmers.

This study suggests that if the objectives of the source are to be served, then it is crucial to study the message code, structure, and treatment to determine the extent to which it is capable of producing uniform and adequate comprehension of the source's intentionality within receivers. Unless the comprehension approximates uniformity across all potential receivers, the variance in the ensuing decision which may result in variance in behavior, i.e. adoption or rejection of an innovation, will not be adequately explained. This study, therefore, suggests a reorientation in development communication research from a study of overt behavior as the dependent variable to an examination of receiver comprehension of source messages that may be producing that behavior.

**REVEALING COMMUNICATION CONSTRAINTS IN
EXTENSION COMMUNICATION STRATEGIES**
(A case-study of a project under the
World Bank's T & V System, India)

A major problem in extension projects dealing with the poorest farmers in developing nations is the communication constraint (Ascroft, 1971; Roling et al., 1976). The fault, according to this author, may reside within the extension process rather than the receivers, particularly with the capacities of agents/agencies to communicate adequately and systematically with project recipients, especially the small-scale farmers. The problem this author addresses is not diffusion in general, but rather the special case presented by the poorest farmers. In fact, many attempts at diffusion of innovations have enjoyed moderate success. For example, innovations such as the miracle rice, hybrid maize and wheat have diffused quite widely in many developing nations. Countries such as India and China which were once food importers have now become exporters. So, the problem discussed in this paper deals explicitly with the poorest sub-group of farmers, who apparently, constitute a fairly large proportion in developing nations.

Reviewing the efforts of communication diffusion projects in the last two decades in the Third World, there is cause for concern about the nature and quality of development messages delivered to the poorest farmers. Several researchers have pointed to the lack of simple, credible, accurate, adequate and relevant information to target audiences (Diaz-Bordenave, 1976; Shingi and Mody, 1976;

Rogers et al., 1979; Reddy, 1983; Kumar, 1981; Singh, 1981).

Consequently, the comprehension of relevant information by the poorest farmers has been far from satisfactory. This author posits that the poorest farmers lack adequate comprehension of cognitive and manual skills necessary to make informed and effective decisions on innovations.

Convergence Model

In development-oriented communication, the primary concerns are with source intentionality to affect behaviors of recipients in ways deemed desirable by the source or donor system, communication strategies and specific messages which encode this intentionality, comprehension of these messages by the recipient client system, and the behavioral change decisions which may arise out of the comprehension. In order to explain the deviation of a recipient's decision from that which was intended by the source, it is necessary first to ensure that the comprehension of the information upon which the decision was to be based was adequate and common to all farmers, i.e. that comprehension did not vary drastically from one individual to another.

Adequate and uniform comprehension is a necessary condition for informed decision-making. If there is a variability in comprehension that individuals derive from messages they receive, then it is quite likely that decisions (to adopt/reject innovations) which result from such comprehension may also vary. Therefore, unless that comprehension approximates a constant across all receivers, the variance in the ensuing decision which may result in

variance in behavior, i.e. adoption or rejection of an innovation, will not be adequately explained. In the ideal situation, messages conveying information about a given issue should be treated so as to reduce variability of comprehension to a point where it approximates a constant (preferably zero) across all recipients. In such a case, variability in decisions becomes less a function of comprehension confusion and more a function of factors such as relevance, affordability, compatability, and so forth of the innovations proposed by the extension agency.

The convergence model of communication (Rogers and Kincaid, 1981; Rogers, 1983) is relevant to the present discussion. According to the convergence model, sources of communication should achieve isomorphism of intent with their receivers. Is this being achieved in development communication projects in the Third World? This study took a close look at an agricultural extension project in south India. An important objective, then, was to examine comprehension of extension team's intentionality by the poorest farmers.

REVIEW OF LITERATURE

While countries such as the United States found encouraging results using strategies developed from the diffusion of innovations research, the results were disappointing in the developing countries as far as the poorest peasants were concerned. For example, agricultural innovations which promised to improve peasant productivity did not penetrate very deeply into the poorest sector of rural economy in the Third World. The S-shaped curve denoting

complete adoption of an innovation, commonly struck in the United States, was seldom found in the rural Third World, particularly within subsistence communities (Ascroft et al., 1980). Why was there a lack of convergence between the intentionality of the communication sources and decisions of the poorest farmers? Was there a misalignment between the research focus and the felt needs of practitioners and peasants in the field?

Misaligned Research Focus

As much of the diffusion research was a post hoc pre-occupation with already diffused innovations, the reasons for the apathy of the poorest peasants in developing nations to adopt innovations, unlike the rich farmers, gave rise to theoretical generalizations on their social-psychological characteristics. Diffusion researchers steered clear off field experimentation leaving the onus of applied diffusion in the hands of practitioners such as agronomists, nutritionists, family planning workers, etc. These professionals experienced limited success in their campaigns but found little of use in existing diffusion literature to help them remove or overcome the constraints impeding the adoption process. Quite clearly, there was a misalignment between what the diffusion researchers chose to examine and what development professionals actually needed (Ascroft et al., 1981).

Based on their research studies on African peasants, Ascroft and others (1973) identified major constraints to adoption of innovations none of which dealt with social-psychological characteristics of peasants: (1) Lack of an effective system for

delivering knowledge and skills; (2) Lack of an effective system for delivering financial and material inputs; (3) Inadequate market development; (4) Infrastructure underdevelopment; (5) Lack of employment opportunities during agricultural lean seasons; and (6) Lack of people involvement in the designing, planning, and execution of development projects. The researchers noted that the overcoming of the above constraints was a prerequisite for successful adoption of innovations by peasants in developing nations. The diffusion of innovations research, however, did not come up with a more dynamic a priori experimental approach focussed on testing alternative strategies for overcoming bottlenecks and thus accelerating the process of diffusion.

This paper puts the spotlight on the first constraint which deals with the diffusion of knowledge, information and skill inputs to the poorer farmers. The author feels that one of the major constraints to non-adoption of innovations by the poorer farmers was the lack of an effective system for disseminating adequate knowledge, information and skills to people in the rural areas of a quality they could understand and use.

Disinterest in Media Message Content

The predominant concern of communication research was on the effects of a particular source, medium, message or a combination of these elements on the receiver. The obsession with effects of mass media on behavior alteration through increased exposure to media, gave little consideration to the content of the messages to which the audience was exposed. In fact, there was an implicit assumption

that any kind of mass media exposure would lead to development. (Rogers, 1969). No attempt was made to discover the type of media messages the audience was exposed to, little or no attention was given to the content and quality of information, knowledge and skills emanating from these messages (Golding, 1974). The corollary to this was that there was no attempt to investigate whether the content of messages was internalized by the audience, i.e. if the messages were consumable, reliable, and efficient leading to comprehension of the message.

The lack of adequate interest in the content of media messages and, consequently, individual or group differences in their use and perception led to a lack of interest in the second dimension of communication effects. Most diffusion of innovations studies focused predominantly on the first dimension, i.e. behavioral dimension of communication effects. They posed questions such as: 'Has there been any effect of the media on respondents' behavior? If so, what has been the nature and direction of that effect on adoption behavior?' Rarely did research seek to investigate another dimension of media effects on the audience: the cognitive dimension or what they know. Diffusion studies did not posit questions such as: Did the communication attempt have a relatively greater effect on the cognition of certain receivers than on others? Why? Whereas the first question asked about the level of communication effects on the adoption behavior, the second question directed communication research to the differential levels of cognition among receivers and to the concern with knowledge gaps (Shingi and Mody, 1976). The

lack of such focus, therefore, did not reveal to the early researchers the potential inequality media exposure could breed by creating "knowledge gaps" among different sections of the audience, particularly the disadvantaged sections low in socioeconomic status (Tichenor et al., 1970).

Limited Concept of Knowledge

In the correlational analyses of diffusion studies, the farmer variables were associated with a rather limited concept of knowledge of new practices with no measurement of the shallow depth of such knowledge or their conditional association with adoption. Shingi and Mody caution that, 'the long-range competence of farmers to evaluate and adopt (or reject) future innovations is not directly facilitated by mere awareness of a great number of innovations... In our opinion, the innovation-decision process is considered to be initiated not when the individual is merely exposed to information on the innovation but when he gains some understanding of how it functions" (Shingi and Mody, 1976:95).

Pro-Technological Innovation Bias

An implicit assumption running through diffusion tenets was that adoption of non-traditional innovations would be advantageous to all potential adopters. While this assumption was true in a few cases, it could not, however, be justified in a majority of cases in the rural Third World where the innovations were clearly ill-adapted to local conditions (Rogers, 1976; Roling et al., 1976). Several examples from Africa, Asia and Latin America illustrate how limited attention was given in diffusion practice to the characteristics of

an innovation, i.e. compatability, complexity, divisibililty, and communicability, before it was diffused to the target audiences especially the poorer farmers.

Source-Orientation Bias

Little attention was paid to locate any deficiencies or shortcomings of the source of an innovation, examine the relative merits and demerits of the innovation proposed and look into the quality of treatment accorded to the messages. The source was considered to be faultless and blameless, the source-oriented messages considered effective, and the innovation diffused considered beneficial to receivers. There was even an implicit assumption that the source knew the kind of change desirable for the adopter (Rogers, 1969).

Pro-Literacy Bias

A great majority of the rural people in the Third World are preliterate. Yet, there have been few effective strategies in diffusion research of communicating innovations to a preliterate audience (Rogers and Adhikarya, 1979). All strategies and innovations presuppose literacy and some level of knowledge or formal education, which are by themselves, innovations in the rural areas. Thus, most benefits have accrued to the elite groups since they possessed the necessary prerequisites such as adequate literacy, previous knowledge, etc. (Shingi and Mody, 1976; Gaur, 1981).

Imperfect Equalizers of Development

Benefits

In many developing nations, extension agents are in short supply and they reach only a fraction of farmers (McAnany, 1980). This constraint, coupled with the pro-progressive farmer strategy of diffusion practice, gave undue importance to opinion leaders or progressive farmers. The basic tenet of diffusion research was that innovations would diffuse autonomously from progressive farmers to other members of the community. In reality, however, diffusion of innovations from progressive farmers was mostly homophilous (Nandapurkar et al., 1983). Information and knowledge did not reach the subsistence farmers who were not integrated into their interpersonal networks. Also, the information and knowledge which managed to reach the small farmers were usually distorted. This was largely due to the fact that diffusion research considered the innovation itself as the message. No efforts were made to carefully construct messages to promote the innovation as it diffused, so as to prevent distortion. As Allport et al. (1947) point out, messages lose fidelity very soon, so it is unlikely that information received second-hand (through interpersonal channels) can provide specific, detailed and reliable information as messages received first-hand (Roling et al., 1976; Singh, 1981; Kumar, 1981).

From the foregoing review of literature, a fairly clear picture of the information and knowledge environment of the rural poor is obtained. There is clearly insufficient quantity of innovation information, knowledge, and skills percolating to the disadvantaged

sections of rural peasants either from the mass media or interpersonal channels of communication. There is a gross imbalance in the amount of information disseminated between the urban and rural areas, and even within rural areas, between the elite and disadvantaged audiences. The quality of information also leaves much to be desired. The innovations handed down to the rural poor were most often irrelevant and the information unreliable, and sometimes even negative to their needs and problems. In light of this, it is obvious why the small or 'traditional' farmer was slow in adopting innovations. Invariably, the source or the channel did not provide him/her with adequate or reliable information or promoted inappropriate innovations.

LOCATION OF STUDY

An on-going agricultural project in Andhra Pradesh state, India, organized under the Training and Visit (T & V) system of the World Bank was the locale for this study. In this project, crop extension was being extensively used to diffuse innovations such as improved seeds, new crop varieties, fertilizers, improved methods of cultivation, etc. to farmers.

The T & V system was organized and administered under four command areas in the state of Andhra Pradesh (Government of A.P., 1983): Nagarjunasagar left canal, Nagarjunasagar right canal, Sriramsagar, and Tungabhadra. The Sriramsagar project command was chosen as the location of study after a random selection among the four command areas. Within the Sriramsagar project, agricultural extension program was administered by a deputy director of

agriculture with headquarters in Jagtial town. S/he was assisted by five subject-matter specialists for disciplines of agronomy, plant protection, extension and training, water use management, and agricultural implements.

Training and Visit System

As the name Training and Visit implied (Benor, 1977), transfer of the package of knowledge and skills from research stations to farmers' fields was achieved in two steps: the first step provided for systematic, time-bound and location-specific training of village extension officers (VEO). The second step ensured transfer of the new knowledge and skills from VEO's to farmers through regular, pre-scheduled visits. Training was imparted once every fortnight on a fixed day to the VEO's by the subject-matter specialists (SMS). In each training session, the SMS's imparted only specific knowledge and skills on main crops which would be relevant for the next fortnight. A mimeographed lesson plan was distributed at the end of the sessions summarizing main points of training. A fixed visiting schedule for every fortnight ensured dissemination of extension messages to farmers on a regular basis. Each VEO was required to meet with about 50 contact farmers in his/her village. The farmers were divided into 8 subgroups and each was visited once or twice during the fortnight according to a pre-arranged schedule. During his/her visits, the VEO imparted knowledge and training on specific practices which needed to be adopted during the next fortnight.

Printed media materials produced by project extension officers such as leaflets, posters, and booklets were used extensively to supplement information/training provided during VEO visits.

METHOD

The Jagitial Extension Division was chosen after a random selection among the three subdivisions. The next task was to choose a village for the study within the Jagitial subdivision. Since the objectives of this study dealt with farmer comprehension of extension intentionality and the expectations were that there may be a low as well as great variation in comprehension, the researcher did not want the findings of the study to be invalidated by the selection of a 'backward' village. So, the criteria used in the selection were the relative 'progressiveness' of the village and 'dynamism' of the village extension officer (VEO). Based on these criteria, Porandla village was chosen as the site for the study. Porandla was declared as the best village in the entire command area in Karimnagar district since 1976 for its extent of adoption of high yielding crop varieties and use of latest agricultural practices. Therefore, a non-random purposive selection method was used to select the study village. In fact, in studies that look at just one or two villages "random selection is rather meaningless and in some cases carries a greater risk of producing 'atypical' data" (Neurath, 1976:104).

Definition of Variables

Source Intentionality. Source intentionality was the information and knowledge on agricultural innovations selected for extension which were transferred to farmers by project extension team. In the operation of the T&V system, dissemination of new information and knowledge on specific innovations was broken down into units of 14 days. The VEO's were trained once every fortnight and following the training, they visited with their farmers during the next fortnight and transferred the new information and knowledge to them.

The fortnight of July 6 through 20, 1983 was chosen as the period of investigation for this study. The author attended the VEO training held on July 6, 1983 to determine source intentionality for the following fortnight. At the end of the session, this researcher picked up a copy of the lesson plan which summarized the main points of the training for the following two weeks. This lesson plan constituted source intentionality for this study.

Comprehension. Comprehension was defined as the possession of complete, accurate, and in-depth information of source intentionality. Since the knowledge that the project extension team disseminated was fairly specific and fact-oriented, precise comprehension was expected to be nearly constant across sampled farmers. Imprecise comprehension, therefore, would be exemplified by a variability in facts and information among sampled farmers. Comprehension was measured in terms of farmers' answers to questions

in the interview schedule dealing with those aspects of information and knowledge transferred by the project extension team and intended for acquisition by the farmer client system. Scores on the items included in the schedule that dealt with comprehension of source intentionality constituted a composite index of farmers' level of comprehension.

Comprehension Index Construction

All 50 contact farmers in Porandla village were interviewed for this study. The interviews (using interview schedules) measured their knowledge and comprehension of extension team's intentionality. Farmer interview schedules were constructed based on project extension team intentionality as contained in the lesson plan for the period of July 6-20, 1983. The schedule contained 107 items of information obtained through 65 questions. These included comprehension items on the major crops: rice and maize as well as other crops such as groundnut, greengram, and turmeric. Other items tapped farmers' comprehension of technical terms as used in the lesson plan and other extension materials.

Data analysis for this study was limited to comprehension of information and knowledge on agricultural practices in the two major crops---rice and maize, and comprehension of technical terms frequently used in extension materials. The items or variables used in the data analysis are listed in Table 1:

Table 1
Index of Comprehension Items

RICE:

Var014 Seed rate per acre
Var015 Name of measure used to weigh seed
Var016 Nursery area planted (extent)
Var017 Seed pretreatment (dosage of chemical)
Var018 Name of fertilizer used in nursery
Var019 Nitrogen dosage in nursery
Var217 Phosphorous dosage in nursery
Var218 Potash dosage in nursery
Var020 Name of fertilizer measure used in nursery
Var021 Depth of water in nursery
Var022 Measure used for depth of water
Var023 Rate of seedlings per hill in mainfield
Var024 Name of pesticide for Hispa pest
Var025 Hispa pesticide dosage
Var027 Measure used for Hispa pesticide
Var028 Stage of Hispa at which Folydol works well
Var029 Name of pesticide for larvae
Var030 Larvae pesticide dosage
Var032 Measure used for larvae pesticide

MAIZE:

Var033 Seed rate per acre
Var034 Measure used to weigh seed
Var035 Distance between rows
Var036 Distance between plants
Var037 Measure used for plant distance
Var040 Number of plants per acre

TECHNICAL TERMS:

Var138 Distance measured by 30 cms
Var139 Distance measured by 12 inches
Var140 Number of square meters in a gunta
Var141 Number of square yards in a gunta
Var142 Number of acres in a hectare
Var143 Name of present month in English calender
Var144 Name of previous month in English calender
Var145 Name of following month in English calender

The 33 variables listed above comprised an index of items selected to measure farmer comprehension of project extension team intentionality. The 33-item index included 19 rice cultivation items, 6 maize cultivation items and 8 items on comprehension of technical terms.

Factor Analysis

Did all the 33 variables listed above have common factor variances? In other words, did they all measure the same dimension or factor of comprehension? In order to determine the number of dimensions that underlie comprehension, the loading of the comprehension variables on the various dimensions, and the magnitude of the loadings, the variables were submitted to factor analysis. The principal axis factor and principal components analysis were the methods used for factor analyzing the correlation matrix of the variables.

An examination of the correlation matrix indicated that a coefficient could not be computed for 'Var017: Rice seed chemical pretreatment' since the scores showed zero variance. This variable was deleted from the analysis. All the remaining variables were then factor analyzed using the principal axis factor method for extraction and orthogonal varimax rotation to discover the configurations or clusters of the variables in factor space. This preliminary factor analysis indicated that rice variables and the comprehension of technical terms variables were loading together on factors while maize variables were loading on factors all by themselves. Therefore, maize variables were factor analyzed

separately.

Factor analysis is an objective and precise method for constructing indices and locating functional unities from sets of measures. However, accepting a factor matrix without critical evaluation of why certain variables cluster together is tantamount to a reification of the statistical construct. This critical evaluation of the factor loadings becomes more important during the process of naming the constructs that explain the underlying unities of the factors. After a preliminary factor analysis, it was found that discovering the underlying unities of a set of factors was extremely difficult due to certain variables among the factor loadings which, in the judgement of the researcher, did not belong to that cluster. This judgement was based on the familiarity of the researcher with the data and method of data collection. In other words, though the variables seemed to fit statistically into clusters, from a conceptual and theoretical perspective, some variables did not seem to belong to some of the clusters. The following variables, therefore, were deleted from the factor matrix: Var014, Var016, Var021, Var028, Var138, Var140 and Var141.

The remaining variables were then factor analyzed using the principal axis factor method for extraction and orthogonal varimax rotation to clarify clusters of variables in factor space. The factor matrices yielded are given in Tables 2 and 3:

Table 2
Rotated Factor Matrix of Comprehension of Rice
Innovations and Technical Terminology

VARIABLES	1	2	3	4	5

VAR145	.90	-.02	.24	.02	.09
VAR144	.89	-.14	.35	.03	.11
VAR143	.82	-.11	.48	.02	.02
VAR142	.63	.07	.07	.11	-.18
VAR139	.53	-.09	.11	.33	.29
VAR019	-.11	.96	-.02	.01	.02
VAR217	-.05	.94	-.00	-.15	-.03
VAR218	.03	.92	-.10	-.03	.04
VAR029	.30	-.01	.77	-.25	.06
VAR030	.33	.00	.71	-.16	.22
VAR025	.15	-.07	.67	.28	-.24
VAR024	.29	-.08	.59	.27	-.16
VAR015	.24	-.06	.10	.62	.08
VAR023	.14	-.11	.05	.58	.16
VAR022	.33	-.03	.13	-.49	-.00
VAR018	-.19	.20	.06	.17	.67
VAR027	.13	-.16	-.09	.01	.57
VAR020	.06	.32	-.24	.37	.47
VAR032	.40	-.03	.31	.10	.42

Table 3
Rotated Factor Matrix of Maize
Innovations Comprehension

VARIABLES	1	2	3

VAR033	.74	-.04	-.18
VAR040	.55	.28	.30
VAR035	.39	.05	.19
VAR034	.01	.71	-.05
VAR037	.11	.62	.03
VAR036	.06	-.04	.66

The five factors yielded in Table 2 and the first two factors in Table 3 were used as scales or indices on which the level of comprehension of farmers was measured. All variables that loaded on any one factor were used to compute the respective comprehension scales after ensuring that (a) their respective raw score distributions were adjusted for variances, and (b) relative weights were attached to all the scores consistent with the magnitude of the factor loading of the variables. The constructs that seemed to explain the underlying unities of the five factors or comprehension scales in Table 2 were named as: Comprehension of technical terms, Knowledge of rice fertilizer dosage, Knowledge of rice pesticides, knowledge of rice recommendations, and Comprehension of weights and measures used for rice chemicals. The constructs that seemed to underlie comprehension scales in Table 3 were: Knowledge of maize recommendations, and Comprehension of weights and measures used for maize. These seven scales (see Table 4) were used to measure farmer comprehension:

Table 4

Scales Used to Measure
Farmer Comprehension

VARIABLES LOADING ON SCALES	NAME OF SCALE	SCORE RANGE	RELIABILITY ANALYSIS	
			Inter- Item Correlation	Alpha
Var145 Var144 Var143 Var142 Var139	Comprehension of Technical Terms	0-14	.63	.89
Var019 Var217 Var218	Knowledge of Rice Fertilizer Dosage	0-50	.88	.88
Var029 Var030 Var024 Var025	Knowledge of Rice Pesticides	0-5	.51	.80
Var015 Var022 Var023	Knowledge of Rice Recommendations	0-5	.30	.56
Var018 Var027 Var020 Var032	Comprehension of Weights and Measures used for Rice Chemicals	0-6	.28	.60
Var033 Var035 Var040	Knowledge of Maize Recommendations	0-6	.23	.46
Var034 Var037	Comprehension of Weights & Measures used for Maize	0-2	.44	.62

RESULTS

Farmer Profile

Nearly 70 percent of the respondents were 45 years of age or younger, more than half had never been to school, and close to 92 percent had had only six years of formal schooling. Nearly 96 percent of farmers were males and about 94 percent owned less than 15 acres of land with about 72 percent owning less than 10 acres.

Variability in Comprehension Scores

Among Farmers

In order to determine levels of comprehension and their variance across members of the farmer client system, frequency distributions were computed for each of the seven comprehension scales. The frequency counts along with measures of central tendency and variability were used to examine the distribution of the comprehension scores and their dispersion.

An examination of the distribution of comprehension scores revealed both a low level of comprehension and great variability in scores of farmers across all the seven scales. Table 5 summarizes the findings in terms of the level of comprehension:

Table 5

Level of Farmer Comprehension
of Extension Messages

Level of Comprehension	Name of Comprehension Scale
High	1. Knowledge of rice fertilizer dosage 2. Comprehension of weights and measures used for rice
Moderate	1. Comprehension of weights and measures used for maize
Low	1. Knowledge of technical terms 2. Knowledge of rice pesticides 3. Knowledge of rice recommendations 4. Knowledge of maize recommendations

CONCLUSION

This study has the potential for modifying or adding to the existing body of knowledge in development support communication. It puts the spotlight on an aspect that has not received much attention until now: receiver comprehension of source messages. This study has showed that the source is not very successful in achieving isomorphism of intent with receivers. Again, this study deals only with the poorest farmers. Extension efforts have generally been fairly successful with large farmers. Several case studies (Rogers, 1969, 1983; Johnson et al., 1979; Hong, 1981) point out the effectiveness of extension with large farmers but relative lack of success with the poorest farmers.

Research and practice in development support communication differentiates between three principal kinds of information or

knowledge: awareness, how-to, and principles (Rogers, 1983).

Awareness knowledge which seems content with providing information on the existence of a new concept or practice has been overemphasized in most communication campaigns. Research points to a paucity of projects providing, in a regular and systematic way, 'how-to' knowledge which consists of information necessary to put the innovation to correct and productive use (Rogers, 1983).

However, development support projects in the Third World sponsored by multilateral, bilateral, national governments or non-government agencies have not been completely oblivious to the shortage of 'how-to' information. Intensive agricultural extension programs, such as for example, the Training and Visit System, are attempting to provide accurate, research-based awareness and how-to knowledge to the ultimate receivers in a timely, regular and systematic way. However, simply creating an aura of scientific communication support in rural areas in developing nations does not, by itself, solve the communication problem. Accurate comprehension of the 'awareness,' 'how-to,' and 'principles' knowledge is vital for effective decision-making at the individual recipient level. The present study, thus, posits a serious constraint in a development communication project: a lack of adequate and uniform receiver comprehension of source intentionality.

Communication is a resource in development. It must be tailored to the wants, needs, capacities, and problems of the recipients of that communication. Viewed in this light, the most critical dependent variable for research is receiver comprehension

of source intentionality. And the crucial independent variables for research are source intentionality and the messages which operationalize this intentionality. If the objectives of the source are to be served, then it is crucial to study not only the content of his or her message but also its code, structure, and treatment to determine the extent to which it is capable of producing uniform and adequate comprehension of the source's intentionality within receivers. If the messages are to be effective, they must be aimed at producing uniform as opposed to random comprehension within receivers. Unless that comprehension approximates uniformity across all potential receivers, the variance in the ensuing decision which may result in variance in behavior, i.e. adoption or rejection of an innovation, will never be adequately explained. This study, therefore, suggests a reorientation in development communication from a study of overt behavior as the dependent variable to an examination of receiver comprehension of source messages that may be producing that behavior.

Recommendations for Future Research

The present study expects that certain message and source-related biases such as: pro-literacy bias, source-orientation bias, pro-innovation bias, and top-down message flow bias are present in project extension teams' message treatment and strategies and that these biases may be associated with the low comprehension and variance in comprehension of extension intentionality among receivers.

Though some of these biases have been mentioned in the diffusion of innovations literature, one cannot find much evidence to indicate that they have been empirically identified and systematically studied to determine their effects upon the communication process. Needed, therefore, are research efforts directed at carefully examining development messages and strategies intended for small-scale farmers to find out whether or not the presence of the aforementioned biases have had the effect of reducing the understandability of messages. In this context, it might be worthwhile to study the communication strategies adopted in countries such as China and Cuba (Hedebro, 1982) which have made great strides in achieving several goals: increasing agricultural production, literacy rates, etc. How did China overcome many of the problems mentioned in this study--- was it through its large cadre of extension workers and interpersonal networks of communication? Or is it the social and political structure that obtains in socialistic countries? These questions are beyond the scope of this paper but the communication experience of several countries such as China, Cuba, Tanzania, and the Shramadana movement in Sri Lanka may shed light on the debilitating effects of biases on comprehension and consequently on poor farmers' decision-making.

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